August 31, 2001

Curriculum Vitae – Fred Russell Kramer

Personal

Birth	July 7, 1942 – New York City
Family	Married – two children

Education

1956 - 1959	The Bronx High School of Science
1959 - 1964	University of Michigan – B.S. with Honors in Zoology
1964 - 1969	The Rockefeller University – Ph.D. (with Vincent Allfrey)
1969 - 1972	Columbia University – Postdoctoral training (with Sol Spiegelman)

Experience

1962 - 1964	Laboratory Technician, Cytogenetics Laboratory Carnegie Institution of Washington, Ann Arbor, Michigan
1969 - 1986	Department of Genetics and Development and Institute of Cancer Research College of Physicians and Surgeons Columbia University

1969 - 1971	Fellow of the American Cancer Society
1971 - 1972	Research Associate
1972 - 1973	Instructor
1973 - 1980	Assistant Professor
1980 - 1983	Senior Research Associate
1983 - 1986	Research Scientist

1986 - present	Member and Chairman, Department of Molecular Genetics The Public Health Research Institute
1987 - present	Research Professor of Microbiology and Cell Biology New York University School of Medicine

Professional activities

Member of the Corporation, Bermuda Biological Station
American Association of University Professors
New York Academy of Sciences
American Society for Biochemistry and Molecular Biology
American Society of Microbiology
The RNA Society
Society of the Sigma Xi
President, Kramer Consulting, Inc.

Bibliography

Structure and function of lampbrush chromosomes

1. Kramer FR (1964) The kinetics of deoxyribonuclease action on the lampbrush chromosomes of *Triturus*. Undergraduate honors thesis. University of Michigan. Thesis advisors: Berwind P. Kaufmann and Helen Gay.

2. Davidson EH, Crippa M, Kramer FR, and Mirsky AE (1966) Genomic function during the lampbrush chromosome stage of amphibian oogenesis. Proc Natl Acad Sci USA 56, 856-863.

Translation of messenger RNA

3. Kramer FR (1969) Factors affecting translation of messenger RNAs *in vitro*: use of a GTP analog to investigate rates of polypeptide chain elongation. Doctoral dissertation. The Rockefeller University. Thesis advisor: Vincent Allfrey.

Sequence and structure of replicating RNAs

4. Kacian DL, Mills DR, Kramer FR, and Spiegelman S (1972) A replicating RNA molecule suitable for a detailed analysis of extracellular evolution and replication. Proc Natl Acad Sci USA 69, 3039-3042.

5. Mills DR, Kramer FR, and Spiegelman S (1973) Complete nucleotide sequence of a replicating RNA molecule. Science 180, 916-927.

6. Mills DR, Kramer FR, Dobkin C, Nishihara T, and Spiegelman S (1975) Nucleotide sequence of microvariant RNA: another small replicating molecule. Proc Natl Acad Sci USA 72, 4252-4256.

7. Klotz G, Kramer FR, and Kleinschmidt AK (1980) Conformational details of partially base-paired small RNAs in the nanometer range. Electron Microscopy 2, 530-531.

In vitro evolution of replicating RNAs

8. Kramer FR, Mills DR, Cole PE, Nishihara T, and Spiegelman S (1974) Evolution *in vitro*: sequence and phenotype of a mutant RNA resistant to ethidium bromide. J Mol Biol 89, 719-736.

Sequence analysis by chain termination

9. Kramer FR and Mills DR (1978) RNA sequencing with radioactive chain-terminating ribonucleotides. Proc Natl Acad Sci USA 75, 5334-5338.

10. Mills DR and Kramer FR (1979) Structure-independent sequence analysis. Proc Natl Acad Sci USA 76, 2232-2235.

11. Axelrod VD and Kramer FR (1985) Transcription from bacteriophage T7 and SP6 RNA polymerase promoters in the presence of 3'-deoxyribonucleoside 5'-triphosphate chain terminators. Biochemistry 24, 5716-5723.

Mechanism of RNA replication

12. Mills DR, Dobkin C, and Kramer FR (1978) Template-determined, variable rate of RNA chain elongation. Cell 15, 541-550.

13. Dobkin C, Mills DR, Kramer FR, and Spiegelman S (1979) RNA replication: required intermediates and the dissociation of template, product, and Qβ replicase. Biochemistry 18, 2038-2044.

14. Mills DR, Kramer FR, Dobkin C, Nishihara T, and Cole PE (1980) Modification of cytidines in a Qβ replicase template: analysis of conformation and localization of lethal nucleotide substitutions. Biochemistry 19, 228-236.

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Replicatable recombinant RNA

20. Miele EA, Mills DR, and Kramer FR (1983) Autocatalytic replication of a recombinant RNA. J Mol Biol 171, 281-295.

21. Kramer FR, Miele EA, and Mills DR (1984) Recombinant RNA. In "The World Biotech Report 1984," Online Publications, Pinnar, United Kingdom, 347-356.

Gene detection utilizing recombinant RNAs

22. Chu BC, Kramer FR, and Orgel LE (1986) Synthesis of an amplifiable reporter RNA for bioassays. Nucleic Acids Res 14, 5591-5603.

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26. Kramer FR, Lizardi PM, and Tyagi S (1992) Qβ amplification assays. Clin Chem 38, 456-457.

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Coupled replication-translation

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Oligonucleotide arrays

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Binary hybridization probes

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Molecular beacons

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35. Tyagi S, Bratu DP, and Kramer FR (1998) Multicolor molecular beacons for allele discrimination. Nature Biotechnol 16, 49-53.

36. Kostrikis LG, Tyagi S, Mhlanga MM, Ho DD, and Kramer FR (1998) Spectral genotyping of human alleles. Science 279, 1228-1229.

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40. Cayouette M, Sucharczuk A, Moores J, Tyagi S, and Kramer FR (1999) Using molecular beacons to monitor PCR product formation. Strategies 12, 85-92.

41. Tyagi S, Marras SAE, and Kramer FR (2000) Wavelength-shifting molecular beacons. Nature Biotechnol 18, 1191-1196.

42. Fung C, Tyagi S, Harris L, Weisberg S, Pinter A, and Kramer FR (2001) Genetic screening using molecular beacons. Clin Chem 47, in preparation.

Molecular beacon applications

43. Gao W, Tyagi S, Kramer FR, and Goldman E (1997) Messenger RNA release from ribosomes during 5'-translational blockage by consecutive low-usage arginine but not leucine codons in *Escherichia coli*. Mol Microbiol 25, 707-716.

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Mycobacterium tuberculosis

47. Piatek AS, Tyagi S, Pol AC, Telenti A, Miller LP, Kramer FR, and Alland D (1998) Molecular beacon sequence analysis for detecting drug resistance in *Mycobacterium tuberculosis*. Nature Biotechnol 16, 359-363.

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Reviews

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58. Marras SAE, Kramer FR, and Tyagi S (2001) Genotyping single nucleotide polymorphisms with molecular beacons. In "Single Nucleotide Polymorphisms: Methods and Protocols," Kwok PY, ed, Humana Press, Totowa, New Jersey, in press.

Current Research Support

1. National Institutes of Health Grant RO1 HL-43521-10
   Molecular beacons for retroviral diagnostics
   June 1, 2000 to May 31, 2005
   Fred Russell Kramer, Principal Investigator
   $562,448 this year ($2,949,532 total award)

2. National Institutes of Health Grant RO1 ES-10536-02
   Detecting mRNAs in living cells with molecular beacons
   October 1, 1999 to September 30, 2002
   Sanjay Tyagi, Principal Investigator
   $664,784 this year ($1,594,450 total award)

3. Hamilton Thorne Research Grant
   Genetic screening with molecular beacons
   January 1, 2000 to December 31, 2001
   Fred Russell Kramer and Sanjay Tyagi, Co-Principal Investigators
   $120,000 per year ($240,000 total award)

4. Ortho-Clinical Diagnostics Research Grant
   Detection of rare *ras* mutations using allele-discriminating primers
   January 1, 2001 to October 31, 2002
   Fred Russell Kramer, Principal Investigator
   $140,000 for 2001 ($260,000 total award)

5. National Institutes of Health Grant RO1 HL-68513-01
   Mycobacterium tuberculosis and host gene expression during infection
   September 1, 2001 to August 31, 2006
   Issar Smith (Public Health Research Institute), Principal Investigator
   Sanjay Tyagi, Co-Investigator
   $125,527 for the first year ($622,630 total requested for our laboratory)

6. The Public Health Research Institute
   Laboratory share of royalties and fees received for licensed patents (ongoing income)
   Fred Russell Kramer and Sanjay Tyagi
   $193,072 during 2000 ($225,000 estimated for 2001)

Patents and Patent Applications

Gene detection utilizing recombinant RNAs

1. Kramer FR, Miele EA, and Mills DR. US Patents 4,786,600 (November 22, 1988), 5,620,870 (April 15, 1997), and 5,871,976 (February 16, 1999). Autocatalytic replication of recombinant RNA. Conceived at Columbia University. Licensed to Gene-Trak Systems.

2. Chu B, Kramer FR, Lizardi P, and Orgel LE. US Patents 4,957,858 (September 18, 1990) and 5,364,760 (November 15, 1994), and European Patent 0266399 (May 18, 1994). Replicative RNA reporter systems. Conceived at Columbia University and the Salk Institute for Biological Studies. Licensed to Gene-Trak Systems.

3. Kramer FR and Lizardi PM. US Patent 5,112,734 (May 12, 1992) and European Patent 0473693 (April 12, 1995). Target-dependent synthesis of an artificial gene for the synthesis of a replicative RNA. Conceived for Gene-Trak Systems.

4. Axelrod VD, Kramer FR, Lizardi PM, and Mills, DR. US Patents 5,356,774 (October 18, 1994) and 5,620,851 (April 15, 1997), and European Patent 0386228 (August 26, 1996). Replicative RNA-based amplification/detection systems. Conceived at Columbia University. Licensed to Gene-Trak Systems.

5. Kramer FR and Lizardi PM. European Patent 0346594 (May 31, 1995). Replicatable hybridizable recombinant RNA probes and methods of using same. Conceived at Columbia University. Licensed to Gene-Trak Systems.

6. Kramer FR and Lizardi PM. US Patent 5,503,979 (April 2, 1996) and US Divisional Patent Application 08/484,992. Method of using replicatable hybridizable recombinant RNA probes. Conceived at Columbia University. Licensed to Gene-Trak Systems.

Target-dependent molecular switches

7. Lizardi PM, Kramer FR, Tyagi S, Guerra CE, and Lomeli-Buyoli HM. US Patent 5,118,801 (June 2, 1992). Nucleic acid process containing an improved molecular switch. Conceived at PHRI. Licensed to 39 companies.

8. Lizardi PM, Kramer FR, Tyagi S, Guerra CE, Lomeli-Buyoli HM, Chu BC, Joyce GF, and Orgel LE. US Patent 5,312,728 (May 17, 1994) and European Patent 0436644 (April 17, 1996). Assays and kits incorporating nucleic acid probes containing an improved molecular switch. Conceived at PHRI and the Salk Institute for Biological Studies. Licensed to 39 companies.

Coupled replication-translation

9. Wu Y, Ryabova LA, Kurnasov OV, Morosov IY, Ugarov VI, Volianik EV, Chetverin AB, Zhang D, Kramer FR, and Spirin AS. US Patent 5,556,769 (September 17, 1996). Coupled replication-translation methods and kits for protein synthesis. Conceived at PHRI.

10. Kramer FR, Miele EA, and Mills DR. US Patent 5,602,001 (February 11, 1997). Cell-free method for synthesizing a protein. Conceived at Columbia University.

Selection of improved ribozymes *in vivo*

11. Kramer FR, Dubnau D, Drlica KA, and Pinter A. US Patent 5,616,459 (April 1, 1997) and European Patent 0600877 (January 26, 2000). Selection of ribozymes that efficiently cleave target RNA. Conceived at PHRI.

Oligonucleotide arrays

12. Chetverin AB and Kramer FR. US Patent 6,103,463 (August 15, 2000). Method of sorting a mixture of nucleic acid strands on a binary array. Conceived at PHRI. Licensed to Affymetrix.

13. Chetverin AB and Kramer FR. US Divisional Patent Applications 08/473,010 and 09/164,249 (both which have been allowed). Novel oligonucleotide arrays and their use for sorting, isolating, sequencing, and manipulating nucleic acids. Conceived at PHRI. Licensed to Affymetrix.

Binary hybridization probes

14. Lizardi PM, Tyagi S, Landegren UD, Kramer FR, and Szostak JW. US Patent 5,652,107 (July 29, 1997). Diagnostic assays and kits for RNA using RNA binary probes and a ribozyme ligase. Conceived at PHRI and the Massachusetts General Hospital.

15. Tyagi S, Kramer FR, Lizardi PM, Landegren UD, and Blok HJ. US Patent 5,759,773 (June 2, 1998). Sensitive nucleic acid sandwich hybridization assay. Conceived at PHRI. Licensed to Vysis.

16. Tyagi S. US Patent 5,807,674 (September 15, 1998). Diagnostic assays and kits for RNA using RNA binary probes and a protein that is an RNA-directed RNA ligase. Conceived at PHRI. Licensed to Vysis.

Molecular beacons

17. Tyagi S, Kramer FR, and Lizardi PM. US patents 5,925,517 (July 20, 1999) and 6,103,476 (August 15, 2000). Detectably labeled dual conformation oligonucleotide probes, assays and kits. Conceived at PHRI. Licensed to 38 companies.

18. Tyagi S, Kramer FR, and Lizardi PM. European Patent Application 95904104.7. Hybridization probes for nucleic acid detection, universal stems, methods and kits. Conceived at PHRI. Licensed to 38 companies.

19. Tyagi S and Kramer FR. US Patent 6,150,097 (November 21, 2000). Nucleic acid detection probes having non-FRET fluorescence quenching and kits and assays including such probes. Conceived at PHRI. Licensed to 38 companies.

20. Kramer FR, Tyagi S, Alland D, Vet J, and Piatek A. International Patent Application PCT/US98/19182. Non-competitive co-amplification methods. Conceived at PHRI. Licensed to 38 companies.

21. Tyagi S, Kramer FR, and Marras SAE. US Patent 6,037,130 (March 14, 2000). Wavelength-shifting probes and primers and their use in assays and kits. Conceived at PHRI. Licensed to 38 companies.

22. Tyagi S, Kramer FR, and Alland D. International Patent Application PCT/US00/28515. Assays for short sequence variants. Conceived at PHRI.

23. Tyagi S and Kramer FR. Application in preparation. Molecular beacon pairs that interact by FRET to lower fluorescence background in living cells. Conceived at PHRI.

Allele-discriminating primers

24. Tyagi S, Kramer FR, and Vartikian R. US Patent 6,277,607 (August 21, 2001). High specificity primers, amplification methods and kits. Conceived at PHRI. Licensed to Ortho-Clinical Diagnostics.

Allele-discriminating antisense therapeutics

25. Tyagi S and Kramer FR. International Patent Application PCT/US00/14133. High specificity hairpin antisense oligonucleotides. Conceived at PHRI.

Oligonucleotide-facilitated coalescence of cells and liposomes

26. Tyagi S, Kramer FR, and Alsmadi OA. US Provisional Patent Application 60/239,698. Oligonucleotide-facilitated coalescence. Conceived at PHRI.

PROOF OF SERVICE
(FRCP 5)

I am a citizen of the United States and a resident of the State of California. I am employed in San Diego, State of California, in the office of a member of the bar of this Court, at whose direction the service was made. I am over the age of eighteen years, and not a party to the within action. My business address is 4401 Eastgate Mall, San Diego, California 92121. On the date set forth below I served the documents described below in the manner described below:

1. **SUPPLEMENTAL EXPERT REPORT OF FRED R. KRAMER**

☑ (BY U.S. MAIL) I am personally and readily familiar with the business practice of Cooley Godward LLP for collection and processing of correspondence for mailing with the United States Postal Service, and I caused such envelope(s) with postage thereon fully prepaid to be placed in the United States Postal Service at San Diego, California.

☐ (BY MESSENGER SERVICE) by consigning the document(s) to an authorized courier and/or process server for hand delivery on this date. See attached Proof of Personal Service.

☑ (BY FACSIMILE) I am personally and readily familiar with the business practice of Cooley Godward llp for collection and processing of document(s) to be transmitted by facsimile and I caused such document(s) on this date to be transmitted by facsimile to the offices of addressee(s) at the numbers listed below.

☐ (BY OVERNIGHT MAIL) I am personally and readily familiar with the business practice of Cooley Godward llp for collection and processing of correspondence for overnight delivery, and I caused such document(s) described herein to be deposited for delivery to a facility regularly maintained by Federal Express for overnight delivery.

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UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

GEN-PROBE, INCORPORATED,

Plaintiff,

v.

VYSIS, INC.,

Defendant.

CASE NO. 99CV 2668H (AJB)

EXPERT REPORT OF ANDREW FEINBERG, M.D.

I, Andrew P. Feinberg, M.D., have been retained by counsel for defendant Vysis, Inc. ("Vysis"), to serve as an expert witness in the above-referenced action. I hereby submit this expert report.

Background

1. I received my bachelors degree, M.D., and M.P.H. degrees from Johns Hopkins University in 1973, 1976, and 1981, respectively. I performed research fellowships at the University of California San Diego from 1977 to 1979 and at Johns Hopkins University School of Medicine from 1981 to 1983. During the latter period I invented the random priming procedure for labeling DNA. This work was published in *Analytical Biochemistry*, vol. 132, pp. 6-13 (1983). "A Technique for Radiolabeling DNA Restriction Endonuclease Fragments to High Specific Activity," by Andrew P. Feinberg and Bert Vogelstein. This article has been cited many thousands of times in the literature and I am extremely familiar with the techniques described therein.

2. In addition, I wrote a review article on this subject in 1991, Andrew P. Feinberg, "Labeling of Probes by the Random Primer Procedure." published in *Methods in Gene Technology*, vol. 1, pp. 63-70.

3. My awards include general honors of Johns Hopkins University; Phi Beta Kappa; Delta Omega; Johns Hopkins University School of Medicine award for postdoctoral investigation; Fellow of the American College of Physicians; Member, American Society for Clinical Investigation; Member, Association of American Physicians; Institute for Scientific Information most-cited authors list; and Dean's Lecturer at Johns Hopkins University School of Medicine and the University of Kentucky School of Medicine.

4. I was an instructor in Medicine from 1979 to 1980, and Assistant Professor of Oncology and Medicine from 1983 to 1986, at Johns Hopkins University School of Medicine. I was an Assistant and Associate Professor of Internal Medicine and Human Genetics at the University of Michigan from 1986 to 1994 as well as a Howard Hughes Investigator at that institution. Since 1994, I have been King Fahd Professor of Molecular Medicine in the Institute of Genetic Medicine

and the Department of Medicine at Johns Hopkins University School of Medicine, with joint appointments in Oncology and Molecular Biology & Genetics.

5. I am the author of over 100 articles, including 78 peer-reviewed original reports. Most of these publications are in "high impact" journals, including *Science*, *Nature*, *Cancer Research*, *Nature Genetics*, *Human Molecular Genetics*, *Journal of the National Cancer Institute*, *Nature Medicine*, *Proceedings of the National Academy of Sciences*, *Blood*, *American Journal of Human Genetics*, *Journal of Clinical Investigation*. I am considered an expert in gene technology and am an inventor on six patents awarded or pending. A copy of my current *curriculum vitae* is attached to this report as Exhibit A.

6. I am not an employee, nor have I been an employee, of any of the litigant companies, and I have no prior contact with the litigants or their attorneys.

7. In preparing this report I have reviewed the following materials:

a) U.S. Patent No. 5,750,338

b) U.S. Patent No. 4,683,202

c) U.S. Patent No. 5,043,272

d) Expert Report of Mark S. Berninger

e) Feinberg and Vogelstein, *Analytical Biochemistry* 132:6-13 (1983)

8. My testimony and opinions will be based upon the materials identified in paragraph 7 of this report and my background in molecular biology, including my education and my extensive experience in that field.

Opinions

9. I have been asked to evaluate the issue of whether U.S. Patent No. 5,750,338 ("the '338 patent") provides sufficient information for one skilled in the art to perform amplification of a target sequence using random primers, as of December 21, 1987.

10. I have carefully reviewed the '338 patent and particularly the sections relevant to random primers and amplification. My conclusions are as follows.

11. I conclude that the teachings of Examples 5 and 6, which address the use of random oligonucleotides to cause replication of target DNA, would have required no special knowledge of those skilled in the art and could have been performed by one skilled in the art as of December 21, 1987.

12. I also conclude that Example 6, in which the Klenow fragment of DNA polymerase is added in appropriate buffer with random hexamer oligonucleotides to bring about nonspecific double-stranded DNA synthesis, would have been within the skill of those in the art and would have required no special knowledge.

13. I also conclude that other techniques known in the art would have enabled one skilled in the art to perform target site amplification using methods other than Examples 5 and 6.

14. I further conclude that Example 6 is well-described and using the information in this example, as well as information known to one of ordinary skill in the art as of December 21, 1987, the procedures described in this example could have been performed with information available within the patent at the date of its filing.

15. The use of random primers to achieve amplification of target nucleic acid is described in several places in the '338 patent, and particularly in Examples 5 and 6 and Figures 5 and 6.

16. The diagram in Figure 6, and the description referring to that Figure, is sufficient to allow one of ordinary skill in the art to perform amplification of a target using DNA polymerase and random hexanucleotide primers. It correctly includes hybridization of primers to target DNA, generation of a first complement target, DNA denaturation, a second round of DNA polymerase to generate a second complement to the target, and so forth.

17. My *Analytical Biochemistry* publication describing the use of random hexanucleotide primers for the generation of DNA product provides for denaturation conditions, annealing conditions, polymerization conditions, and quantification. It is clear from the description in my publication that there is enormous latitude in the reaction conditions that would permit successful DNA synthesis. While the purpose of that original publication was the generation of radioactive probes, and hence additional products were not necessary, it was clear that additional denaturation and polymerization would lead to additional product.

18. While we did not use repeated cycles of denaturation and renaturation to amplify the signal, such an approach is clearly described in U.S. Patent No. 4,683,202 (July 28, 1987) ("the '202 patent"), which discloses the widely known PCR procedure. That procedure has two essential elements: cycles of denaturation, annealing, and renaturation, which are also described in the '338 patent, and also the use of specific primers to amplify a specific target sequence. The '202 patent also describes a variety of reaction conditions that would permit successful amplification of a target nucleic acid.

19. However, the need for specific primers is unnecessary in the '338 patent, as one is not trying to amplify a specific sequence over a background presence (sequence presence on the same membrane, surface, or solution). Rather, the amplification step of the '338 patent is meant to amplify the target sequence that has already been captured. The capture procedure itself is not dependent on amplification, but rather the many steps described in the patent prior to this step and described in Figures 1-3.

20. The '338 patent provides two examples that directly address the issue of amplification using random primers, Examples 5 and 6. Clearly, either example could be used as an approach for amplifying the target DNA. Example 5 involves both DNA polymerase and RNA polymerase, as also described in Figure 5. Example 6 involves DNA polymerase, specifically the Klenow fragment. In Example 5, specific conditions are provided that are suitable for the use of both RNA polymerase and DNA polymerase. These include specific concentrations of buffer, pH, magnesium, and deoxynucleotides.

21. As described in our publication in *Analytical Biochemistry*, pH affected probe stability over a long period of time because at higher pH, the probe can degrade slowly over many hours. We therefore recommended a pH of 6.6 for a single round of polymerization taking place in an overnight setting. We did not recommend such a pH for short polymerization time periods, as clearly shown in Table I of our paper, and indeed the efficiency of polymerization was reduced to 18% at lower pH, for example pH 6.2. Polymerization would occur satisfactorily at a wide range of pH, including pH 9.2 as disclosed in Example 5 of the '338 patent. In Example 6 of the '338 patent, the target DNA is denatured and polymerization occurs with Klenow fragment and deoxynucleotide

triphosphates "in appropriate buffer with random hexamer oligonucleotides to bring about non-specific double-stranded DNA syntheses." (col. 31, lines 62-64). The methods and conditions contemplated by Example 6 would include the random oligonucleotide labeling procedure described in our *Analytical Biochemistry* paper. Thus, one skilled in the art could easily have performed the procedures described in the '338 patent of amplification by using random primers.

22. Moreover, it was well-understood by those skilled in the art that reaction conditions (such as concentration of primers, polymerases, and dNTPs, incubation times and temperatures, pH, and buffer components) could be varied while still achieving amplification of a target nucleic acid. Varying those conditions was considered to be routine by those skilled in the art.

Exhibits

23. Demonstrative or summary exhibits may be created to further illustrate the opinions rendered herein. If such exhibits are created, attorneys for Vysis will provide them to Gen-Probe pursuant to the pretrial order.

Rebuttal Testimony

24. I have been told that Gen-Probe may submit additional or supplemental expert reports concerning the issues addressed in this report. I reserve the right to rebut any such expert report.

25. The opinions set forth in this report reflect my present knowledge, information, and belief, and may be subject to change or modification based upon further discovery in this case, or on facts or circumstances that may come to my attention. I reserve the right to amend and/or supplement this report as additional information is obtained through discovery.

Compensation

26. I will be compensated for the time I spend studying the materials relating to the issues for which I have been asked to testify and testifying in the above-captioned action at my usual expert rate of $400 per hour. In addition, I will be reimbursed for my expenses.

Previous Expert Testimony

27. During the preceding four years, I have not testified as an expert at trial or by deposition.

October 4, 2001

Andrew Feinberg, M.D.